

# **VARIATION OF PUPILLARY DISTANCE: REPUBLIC OF MACEDONIA CASE STUDY**

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# Abstract

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Pupillary distance (PD), the horizontal distance between the centers of pupils in each eye, is very important parameter used due the preparation of prescription eyeglasses. As well in Republic of Macedonia the PD is measured on potential user of prescription eyeglasses before its making. Although regular everyday practice, there is no any investigation related to PD of the population for the country. This fact motivated as to perform small case study in order to obtained preliminary results for population PD for the country as well as to investigate its variation due to gender and age.

The survey was done in Tetovo municipality (Republic of Macedonia) in 2013. A totally 98 participants (34 female and 64 male) in age from 9 to 90 were observed. The participant observation was included: the monocular pupillary distance near measurements for both eyes using millimeter ruler as well determination of PD in mm.

The obtained results of PD were within the range from 44 to 70 mm with mean value of 63 mm. The analysis of variance confirmed PD dependence of gender and age at 95% confidence level (ANCOVA,  $p < 0.0001$ ). The mean female PD value of  $(61 \pm 4)$  mm was lower than mean male PD value of  $(63 \pm 4)$  mm (Fisher LSD test,  $p = 0.005$ ). Due the linear regression analysis female PD and male PD dependence of age was modeled with linear function. Although the significant correlation between the quantities, the model was with relatively low coefficient of determination ( $R^2 = 0.26$ ) indicating possibility of another parameters influence on the PD results.

# Introduction

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## Material and methods

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## Results

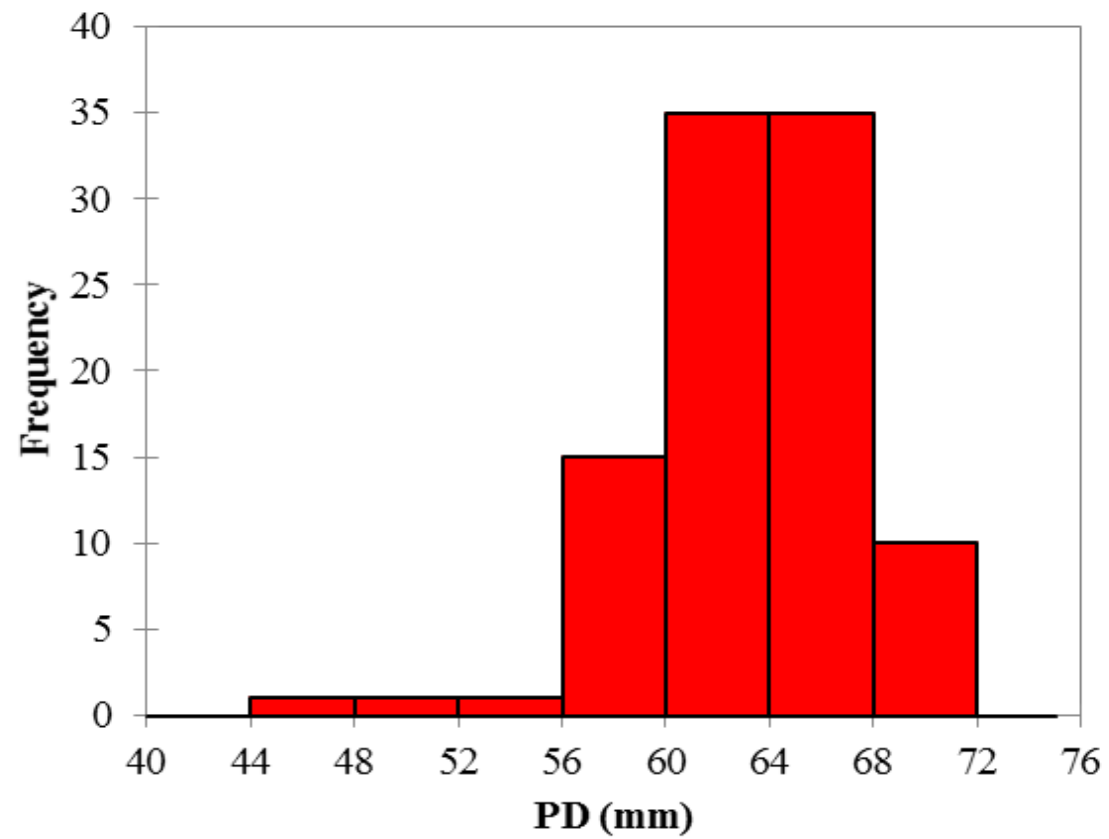
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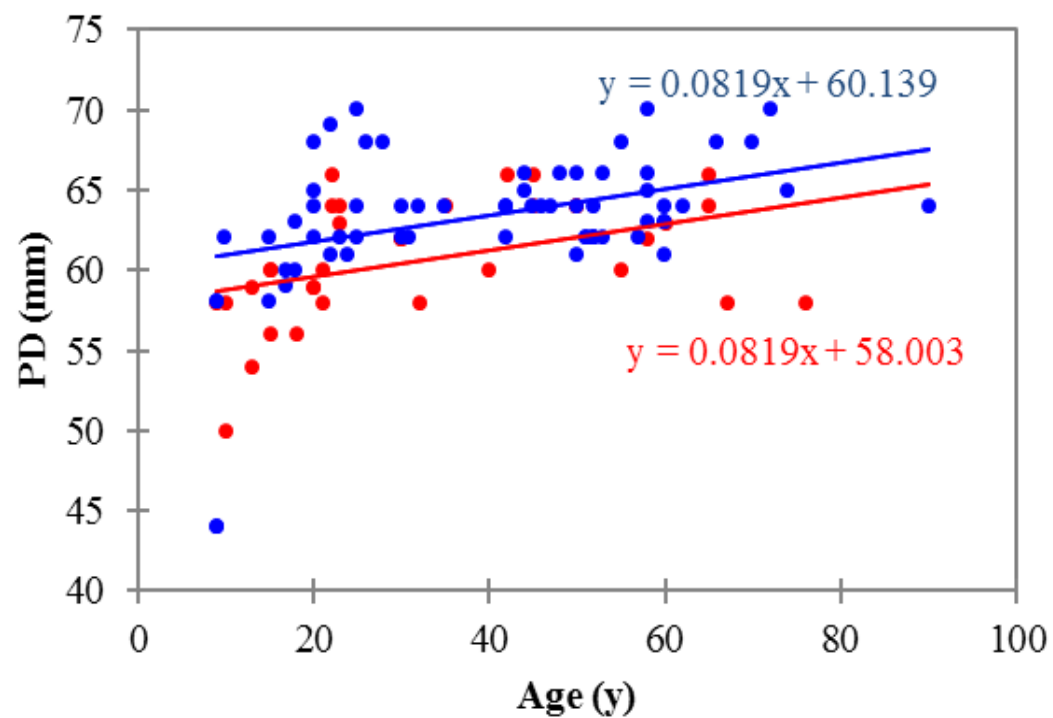
Table 1 Descriptive statistic of monocular near distances and pupillary distances in mm

Sample	No. of observations	Minimum	Maximum	Median	Mean	Standard deviation	CV
Mono.D. (mm)	98	22.00	35.00	31.00	31.23	2.04	6.54%
Mono.L. (mm)	98	22.00	36.00	31.00	31.23	2.06	6.60%
PD (mm)	98	44.00	70.00	63.00	62.50	3.96	6.34%

**Histogram of PD**



**Regression of PD by Age ( $R^2=0.2634$ )**



• Female • Male — Model(Female) — Model(Male)



## Conclusion

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Although regular everyday practice, there is no any investigation related to PD of the population for the country. This fact motivated as to perform small case study in order to obtained preliminary results for population PD for the country as well as to investigate its variation due to gender and age. Although the significant correlation between the quantities, the model was with relatively low coefficient of determination ( $R^2=0.26$ ) indicating possibility of another parameters influence on the PD results.